

d) REMARKS:

Claims 1 to 9, as amended, appear in this application for the Examiner's review and consideration. The amendments are fully supported by the specification and claims as originally filed. Therefore, there is no issue of new matter. Reconsideration of the present claims is respectfully requested.

Claims 1 to 6, 8, and 9 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by JP11-29863 ("JP '863") for the reasons set forth on pages 2 and 3 of the Office Action, and claim 7 was rejected under 35 U.S.C. §103(a) as being unpatentable over JP '863 for the reasons set forth on page 4 of the Office Action.

In response, Applicants submit that the presently claimed invention is directed to a sputtering apparatus and a sputtering method for forming a film on a substrate in a film forming space while monitoring emission intensity of plasma. The claimed method comprises the steps of detecting a thickness of the film formed on the substrate, comparing the detected value with a preset value of the film thickness, deciding a target value of the emission intensity that will provided the preset value of the film thickness in accordance with a compared result, and adjusting the emission intensity to the target value.

The apparatus for the presently claimed invention comprises a film forming container, a substrate feeding mechanism, and an emission intensity monitor. The claimed apparatus further comprises a film thickness measuring device, configured to measure a thickness of a film formed on a substrate and outputting a measured result, a comparator, configured to compare an output of the film thickness measuring device with a preset value of the film thickness and to output a target value of the emission intensity monitor in accordance with a compared result, and an emission intensity target-value setting unit,

configured to receive the output target value from the comparator, and to adjust the emission intensity to the target value.

In contrast, JP '863 discloses a sputtering method and apparatus in which, as discussed in the present specification, pages 3 and 4, paragraphs 10 and 11, a substrate is placed in a film forming chamber, and a discharge is generated in the presence of a sputtering gas, but in the absence of a reactive gas. In the absence of the reactive gas, the sensitivity of the plasma emission monitor is adjusted to correspond to a plasma luminescence intensity that corresponds to a desired deposition rate. JP '863, paragraphs 7, 14, 18, and 22. The luminescence intensity is determined for a given deposition rate prior to the deposition. JP '863, paragraph 14. The reactive gas is then introduced into the discharge chamber, and deposition begins. The rate at which the reactive gas is introduced is varied to maintain a constant plasma luminescence intensity and a constant deposition rate. JP '863, paragraphs 14, 18, and 22. Therefore, JP '863 discloses that, prior to deposition, the discharge intensity and PEM sensitivity are set for a desired deposition rate, and, during deposition, the plasma luminescence intensity, a measure of the discharge intensity, is maintained at a constant rate to obtain a constant deposition rate.

JP '863 does not disclose or suggest the presently claimed invention. In particular, JP '863 does not disclose or suggest detecting the thickness of the deposited film, comparing the detected thickness with a predetermined value for the desired film thickness, determining what value of emission intensity will provide the desired film thickness, and adjusting the emission intensity to that target value. That is, in the presently claimed invention, the emission intensity is changed based on the thickness of the deposited film during the deposition process. In contrast, JP '863 does not disclose

changing the emission intensity to remedy defects in a deposited film. Instead, JP '863 discloses changing the flow of a reactive gas into the film forming chamber when the emission intensity changes to maintain a constant emission intensity. This is not the process of the presently claimed invention in which the emission intensity is changed based on the thickness of the deposited film.

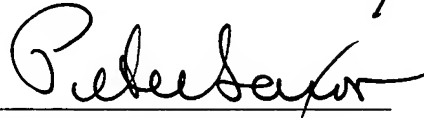
In addition, JP '863 does not disclose or even suggest a sputtering apparatus, comprising a comparator that is configured to compare the thickness of the deposited film to a present value, and to provide an output to an emission intensity target-value setting unit that is configured to adjust the emission intensity to the target value based on the output of the comparator. Instead, JP '863 discloses a plasma emission monitor that is configured to determine the plasma emission intensity and to change the flow rate of a reactive gas to maintain the emission intensity at a constant level.

Therefore, as JP '863 discloses maintaining the emission intensity at a constant level, rather than varying the emission intensity to obtain a constant deposition rate, JP '863 does not disclose or even suggest the presently claimed invention, and, thus, the present claims are not anticipated by or rendered obvious over that reference. Accordingly, it is respectfully requested that the Examiner withdraw the rejections of the claims under 35 U.S.C. §§ 102(b) and 35 U.S.C. 103(a).

As all rejections are overcome, all claims are believed to be in condition for allowance. An early notice to that effect would be appreciated.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Robert S. Saxe", written over a horizontal line.

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